

CLAIMS

What is claimed is:

1 1. A method for arranging digital images, comprising:
2 generating a first trial pack and a second trial pack, such that in the first
3 trial pack the digital images are uniquely oriented as compared to the second
4 trial pack;
5 comparing the trial packs; and
6 selecting one of the trial packs based on the comparison.

1 2. The method of Claim 1, wherein comparing comprises identifying a
2 trial pack that leaves the least unused space, and wherein selecting comprises
3 selecting the identified trial pack.

1 3. A method for arranging digital images on a page, comprising:
2 defining a packing area;
3 if it will fit in the packing area, packing a digital image in the first
4 orientation in a first trial pack; and
5 if it will fit in the packing area, packing the digital image in the second
6 orientation in a second trial pack.

1 4. The method of Claim 3, further comprising:
2 identifying a largest image size that will fit in the packing area; and
3 wherein packing the digital image in the first orientation includes, if a
4 digital image of the identified size will fit in the first orientation, packing as many
5 digital images of the identified size as possible in the first trial pack; and
6 wherein packing the digital image in the second orientation includes, if a
7 digital image of the identified size will fit in the second orientation, packing as
8 many digital images of the identified size as possible in the second trial pack.

1 5. The method of Claim 4, wherein:
2 identifying a largest size, comprises identifying, from a set of digital
3 images, a largest image size that will fit in the packing area; and

1 packing as many digital images of the identified size as possible
2 comprises repeatedly packing digital images of the identified size in a given
3 orientation until either another digital image of the identified size will not fit or
4 no digital image of the identified size remains in the set.

1 6. A method for generating trial packs from a set of digital images,
2 comprising
3 opening a trial pack as an empty page;
4 continuing, if possible, each open trial pack and closing each trial pack
5 that cannot be continued; and
6 repeating the steps of continuing and closing until no trial pack remains
7 open.

1 7. The method of Claim 6, wherein continuing, comprises:
2 defining a packing area;
3 upon determining that at least one digital image from the set that has yet
4 to be packed in the open trial pack will fit in the packing area;
5 identifying a largest size of a digital image remaining in the
6 set that will fit in the packing area;
7 if it will fit, packing a digital image of the identified size in a
8 first orientation and continuing the open trial pack as a first child
9 trial pack; and
10 if it will fit, packing a digital image of the identified size in a
11 second orientation and continuing the trial pack as a second child
12 trial pack.

1 8. The method of Claim 7, wherein:
2 packing the identified digital image in the first orientation comprises
3 packing as many digital images of the identified size as possible in the first
4 orientation and continuing the open trial pack as a first child trial pack; and
5 packing the identified digital image in the second orientation comprises
6 packing as many digital images of the identified size as possible in the second
7 orientation and continuing the open trial pack as a second child trial pack.

1 9. The method of Claim 8, wherein packing as many digital images of
2 the identified size as possible comprises repeatedly packing digital images of the
3 identified size in a given orientation until either another digital image of the
4 identified size will not fit or no digital image of the identified size remains in the
5 set.

1 10. The method of Claim 7, wherein closing comprises, for each open
2 trial pack, closing that pack if no digital image from the set that has yet to be
3 packed in the open trial pack will fit in the packing area.

1 11. A method for arranging a set of digital images on a page,
2 comprising:
3 selecting a set of digital images;
4 generating trial packs for the selected set of digital images;
5 comparing the trial packs;
6 selecting a trial pack based upon the comparison; and
7 determining if any of the digital images from the set were not used in the
8 selected trial pack, and if any digital images are determined to not be used,
9 selecting the unused digital images as the set of digital images and repeating the
10 steps of generating, comparing, selecting, and determining.

1 12. The method of Claim 11, wherein generating trial packs comprises:
2 opening a trial pack as an empty page;
3 continuing, if possible, each open trial pack and closing each trial pack
4 that cannot be continued; and
5 repeating the steps of continuing and closing until no trial pack remains
6 open.

1 13. The method of Claim 12, wherein comparing comprises comparing
2 closed trial packs.

1 14. The method of Claim 12, wherein continuing, comprises:
2 defining a packing area;
3 upon determining that at least one digital image from the set that has yet
4 to be packed in the open trial pack will fit in the packing area;
5 identifying a largest size of a digital image remaining in the
6 set that will fit in the packing area;
7 if it will fit, packing a digital image of the identified size in a
8 first orientation and continuing the open trial pack as a first child
9 trial pack; and
10 if it will fit, packing a digital image of the identified size in a
11 second orientation and continuing the trial pack as a second child
12 trial pack.

1 15. The method of Claim 14, wherein:
2 packing the identified digital image in the first orientation comprises
3 packing as many digital images of the identified size as possible in the first
4 orientation and continuing the open trial pack as a first child trial pack; and
5 packing the identified digital image in the second orientation comprises
6 packing as many digital images of the identified size as possible in the second
7 orientation and continuing the open trial pack as a second child trial pack.

1 16. The method of Claim 15, wherein packing as many digital images
2 of the identified size as possible comprises repeatedly packing digital images of
3 the identified size in a given orientation until either another digital image of the
4 identified size will not fit or no digital image of the identified size remains in the
5 set.

1 17. The method of Claim 14, wherein closing comprises, for each open
2 trial pack, closing that pack if no digital image from the set that has yet to be
3 packed in the open trial pack will fit in the packing area.
4

1 18. The method of Claim 14, wherein defining a packing area
2 comprises identifying a geometry of a packed space and defining a packing area
3 according to the geometry of the packed space.

1 19. The method of Claim 14, wherein defining a packing area
2 comprises identifying a packed space as rectangular, identifying left over spaces
3 located diagonally, vertically, and horizontally relative to the packed space,
4 combining the diagonal space with either the vertical space or the horizontal
5 space creating a combined space having a maximized small dimension, and
6 defining a first packing area as the combined space and defining a second
7 packing area as the remaining horizontal or vertical space.

1 20. The method of Claim 14, wherein identifying a packing area
2 comprises identifying a packed space as irregular, maximizing a jagged space,
3 identifying remaining spaces that are located vertically and horizontally relative
4 to the packed space, defining a first packing area as the maximized jagged
5 space, defining a second packing area as the left over vertical space, and
6 defining a third packing area as the left over horizontal space.

1 21. A computer readable medium having instructions for:
2 generating a first trial pack and a second trial pack, such that in the first
3 trial pack digital images are uniquely oriented as compared to the second trial
4 pack;
5 comparing the trial packs; and
6 selecting one of the trial packs based on the comparison.

1 22. The medium of Claim 21, wherein the instructions for comparing
2 include instructions for identifying a trial pack that leaves the least unused
3 space, and wherein the instructions for selecting include instructions for
4 selecting the identified trial pack.

1 23. A computer readable medium having instructions for:
2 defining a packing area;

3 if it will fit in the packing area, packing a digital image in the first
4 orientation in a first trial pack; and
5 if it will fit in the packing area, packing the digital image in the second
6 orientation in a second trial pack.

1 24. The medium of Claim 23, having further instruction for:
2 identifying a largest image size that will fit in the packing area; and
3 wherein the instructions for packing the digital image in the first
4 orientation include instructions for, if a digital image of the identified size will fit
5 in the first orientation, packing as many digital images of the identified size as
6 possible in the first trial pack; and
7 wherein the instructions for packing the digital image in the second
8 orientation include instructions for, if a digital image of the identified size will fit
9 in the second orientation, packing as many digital images of the identified size
10 as possible in the second trial pack.

1 25. The medium of Claim 24, wherein the instructions for:
2 identifying a largest size, comprises identifying, from a set of digital
3 images, a largest image size that will fit in the packing area; and
4 packing as many digital images of the identified size as possible
5 comprises repeatedly packing digital images of the identified size in a given
6 orientation until either another digital image of the identified size will not fit or
7 no digital image of the identified size remains in the set.

1 26. A computer readable medium having instructions for:
2 selecting a set of digital images;
3 opening a trial pack as an empty page;
4 continuing, if possible, each open trial pack and closing each trial pack
5 that cannot be continued; and
6 repeating the instructions for continuing and closing until no trial pack
7 remains open.

1 27. The medium of Claim 26, wherein the instructions for continuing,
2 include instructions for:
3 defining a packing area;
4 upon determining that at least one digital image from the set that has yet
5 to be packed in the open trial pack will fit in the packing area;
6 identifying a largest size of a digital image remaining in the
7 set that will fit in the packing area;
8 if it will fit, packing a digital image of the identified size in a
9 first orientation and continuing the open trial pack as a first child
10 trial pack; and
11 if it will fit, packing a digital image of the identified size in a
12 second orientation and continuing the trial pack as a second child
13 trial pack.

1 28. The medium of Claim 27, wherein the instructions for:
2 packing the identified digital image in the first orientation include
3 instructions for packing as many digital images of the identified size as possible
4 in the first orientation and continuing the open trial pack as a first child trial
5 pack; and
6 packing the identified digital image in the second orientation include
7 instructions for packing as many digital images of the identified size as possible
8 in the second orientation and continuing the open trial pack as a second child
9 trial pack.

1 29. The medium of Claim 28, wherein the instructions for packing as
2 many digital images of the identified size as possible include instructions for
3 repeatedly packing digital images of the identified size in a given orientation until
4 either another digital image of the identified size will not fit or no digital image of
5 the identified size remains in the set.

1 30. The medium of Claim 27, wherein the instructions for closing
2 include instructions for, for each open trial pack, closing that pack if no digital
3 image from the set that has yet to be packed in the open trial pack will fit in the
4 packing area.

1 31. A computer readable medium having instructions for
2 selecting a set of digital images;
3 generating trial packs for the selected set of digital images;
4 comparing the trial packs;
5 selecting a trial pack based upon the comparison; and
6 determining if any of the digital images from the set were not used in the
7 selected trial pack, and if any digital images are determined to not be used,
8 selecting the unused digital images as the set of digital images and repeating the
9 steps of generating, comparing, selecting, and determining.

1 32. The medium of Claim 31, wherein the instructions for generating
2 trial packs include instructions for:
3 opening a trial pack as an empty page;
4 continuing, if possible, each open trial pack closing each trial pack that
5 cannot be continued; and
6 repeating the instruction for continuing and closing until no trial pack
7 remains open.

1 33. The medium of Claim 32, wherein the instructions for comparing
2 include instructions for comparing closed trial packs.

1 34. The medium of Claim 32, wherein the instructions for continuing,
2 include instructions for:
3 defining a packing area;
4 upon determining that at least one digital image from the set that has yet
5 to be packed in the open trial pack will fit in the packing area;
6 identifying a largest size of a digital image remaining in the
7 set that will fit in the packing area;

8 if it will fit, packing a digital image of the identified size in a
9 first orientation and continuing the open trial pack as a first child
10 trial pack; and
11 if it will fit, packing a digital image of the identified size in a
12 second orientation and continuing the trial pack as a second child
13 trial pack.

1 35. The medium of Claim 34, wherein:
2 the instructions for packing the identified digital image in the first
3 orientation include instructions for packing as many digital images of the
4 identified size as possible in the first orientation and continuing the open trial
5 pack as a first child trial pack; and
6 the instructions for packing the identified digital image in the second
7 orientation include instructions for packing as many digital images of the
8 identified size as possible in the second orientation and continuing the open trial
9 pack as a second child trial pack.

1 36. The medium of Claim 35, wherein the instructions for packing as
2 many digital images of the identified size as possible include instructions for
3 repeatedly packing digital images of the identified size in a given orientation until
4 either another digital image of the identified size will not fit or no digital image of
5 the identified size remains in the set.

1 37. The medium of Claim 34, wherein the instructions for closing
2 include instructions for, for each open trial pack, closing that pack if no digital
3 image from the set that has yet to be packed in the open trial pack will fit in the
4 packing area.

1 38. The medium of Claim 34, wherein the instructions for defining a
2 packing area include instructions for identifying a geometry of a packed space
3 and defining a packing area according to the geometry of the packed space.

1 39. The medium of Claim 34, wherein the instructions for defining a
2 packing area include instructions for identifying a packed space as rectangular,
3 identifying left over spaces located diagonally, vertically, and horizontally relative
4 to the packed space, combining the diagonal space with either the vertical space
5 or the horizontal space creating a combined space a maximized small dimension,
6 and defining a first packing area as the combined space and defining a second
7 packing area as the remaining horizontal or vertical space.

1 40. The medium of Claim 34, wherein the instructions for defining a
2 packing area include instructions for identifying a packed space as irregular,
3 maximizing a jagged space, identifying remaining spaces that are located
4 vertically and horizontally relative to the packed space, defining a first packing
5 area as the maximized jagged space, defining a second packing area as the left
6 over vertical space, and defining a third packing are as the left over horizontal
7 space.

1 41. A packing module for arranging digital images, comprising:
2 a trial pack generator operable to generate a first trial pack and a second
3 trial pack, such that digital images in the first trial pack are uniquely oriented as
4 compared to digital images in the second trial pack; and
5 a pack selector operable to compare the trial packs and select one of the
6 trial packs based on the comparison.

1 42. The packing module of Claim 41, wherein the pack selector is
2 operable to identify a trial pack that leaves the least unused space and to select
3 the identified trial pack.

1 43. A system for arranging a set of digital images, comprising a
2 a trial pack generator operable to generate trial packs for the set of digital
3 images;
4 a pack selector operable to compare generated trial packs generated by
5 the trial pack generator, to select a trial pack based upon the comparison; and,
6 until all digital image from the set are used in one of one or more selected trial

1 packs, to direct the trial pack generator to generate new trial packs for any
2 digital images not used in a selected trial pack.

1 44. The system of Claim 43, wherein the trial pack generator includes:
2 a packing area selector operable to define a packing area;
3 a packager operable to open a trial pack as an empty page and, using
4 packing areas defined by the packing area selector, to repeatedly continue , if
5 possible, each open trial pack and to close each open trial pack that cannot be
6 continued until no trial pack remains open.

1 45. The system of Claim 44, wherein:
2 the pack generator includes a coordinator operable to identify from the set
3 a largest size of a digital image remaining in the set that will fit in a space
4 identified by the packing area selector; and
5 the packager is operable to continue an open trial pack by;
6 if it will fit, packing a digital image of the identified size in a
7 first orientation in an packing area and continuing the open trial
8 pack as a first child trial pack; and
9 if it will fit, packing a digital image of the identified size in a
10 second orientation and continuing the trial pack as a second child
11 trial pack.

1 46. The system of Claim 44, wherein the packager is operable to, for
2 each open trial pack, close that trial pack if no digital image from the set that
3 has yet to be packed in the open trial pack will fit in the packing area.

1 47. The system of Claim 44, wherein the pack selector is operable to,
2 once all open trial packs have been closed, compare the closed trial packs and
3 select one of the closed trial packs based on the comparison.

1 48. A packing module for arranging digital images, comprising:
2 a means for generating a first trial pack;
3 a means for generating a second trial pack, such that digital images in the
4 second trial pack are uniquely oriented as compared to digital images in the first
5 trial pack;
6 a means for comparing the trial packs; and
7 a means for selecting one of the trial packs based on the comparison.